



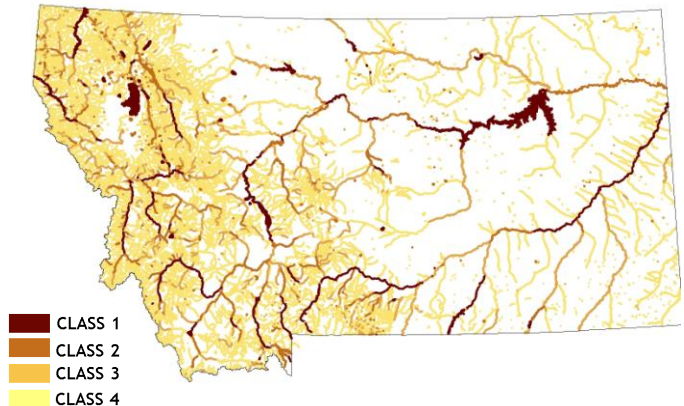
Montana Fish, Wildlife & Parks Crucial Areas Assessment



GAME FISH QUALITY

SUMMARY: This layer depicts the relative quality of 46 cold and warm water game fish populations available to anglers in Montana.

MEASUREMENT UNIT: River segments for flowing water and entire waterbody for lakes/reservoirs. River segments are uniquely identified by river mile and latitude/longitude.



DATA SOURCE(S) / QUALITY: The Montana Fisheries Information System (MFISH) (<http://fwp.mt.gov/fishing/mFish/>) was the source of most data utilized in this assessment. Fish distribution, size, and relative abundance data were extrapolated from fisheries surveys conducted by Montana Fish, Wildlife & Parks (FWP) and collector permit holders from State and Federal Agencies and Non-Governmental Organizations, 1998 - present. Distribution and abundance data were updated by FWP biologists using raw survey data. FWP biologists also used survey data and knowledge of game fish populations to delineate stream reaches with unique or exceptionally large game species present.

DATA SOURCES	
<input checked="" type="checkbox"/>	Survey data – counts or estimates
<input checked="" type="checkbox"/>	Survey data – categorical (e.g. presence/absence)
<input checked="" type="checkbox"/>	Expert opinion based on observation
DATA EXTRAPOLATION TECHNIQUE USED	
<input type="checkbox"/>	None
<input type="checkbox"/>	Modeling of habitat-species associations (deductive)
<input type="checkbox"/>	Statistical modeling (inductive)
<input checked="" type="checkbox"/>	Extrapolation to habitat unit (e.g. stream section)
<input checked="" type="checkbox"/>	Extrapolation based on expert opinion

METHODS: Each game fish species within a waterbody (stream or lake) received a score based on 1) their size, 2) relative abundance and 3) a tier based on angler preference. Regulated species were assigned to a tier based on daily possession limit: Tier 1*, ≤ 5 fish/day and Tier 2**, > 5 fish/day. Unregulated species recognized as sport fish by the International Game Fish Association were assigned Tier 3. Tiers 1 – 3 were assigned 4, 2, or 1 points, respectively.

Relative size was determined by species-specific length categories from literature to determine if species present were less than fishable size, of fishable size, or of trophy potential, with 1, 2, or 4 points possible, respectively. The maximum size of a species captured in a survey determined size potential for each species. FWP biologists assigned relative abundance (rare, common, abundant) to each species' distribution and scores of 1, 2, or 4 points were assigned to each abundance, respectively.

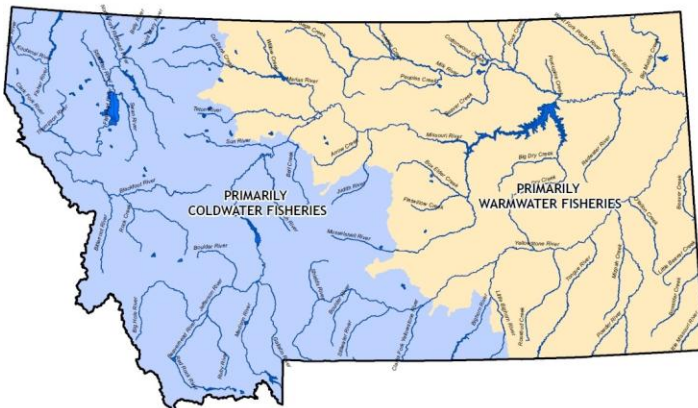
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A score for each species was created by multiplying **Tier x Size x Abundance**, for a maximum score of 64 points possible per species. Species scores were then summed for each reach or waterbody. Additional points were given for: presence of unique species (10 points), exceptional numbers (>2500/mi) of a single species (32pts), and presence of a trophy fishery (20pts), based on FWP expert knowledge.

FINAL CATEGORIZATION: Four categories, representing a gradient of sport fish quality from high to low, were created based on breaks at the 97th, 90th, and 75th percentiles within each type of fishery, either cold or warmwater. Cold or warmwater designation was based on generalized species presence and composition at the 6th Code HUC scale. The final breaks used to classify fisheries from highest to lowest quality were reviewed with area biologists.



General distribution of cold and warmwater fisheries in Montana

CONTACT: Bill Daigle – Data Services Section; 406.444.3737 bdaigle@mt.gov

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CLASS	RANGE OF VALUES	RIVER MILES*		# LAKES*	
		Cold	Warm	Cold	Warm
1	~ Top 3% of Waterbodies With Sport Fish	866 (4%)	259 (3%)	26 (2%)	11 (3%)
2	~ Next 7% of Waterbodies With Sport Fish	1084 (5%)	591 (7%)	130 (8%)	28 (7%)
3	~Next 15% of Waterbodies With Sport Fish	2399 (11%)	1361 (15%)	215 (14%)	50 (13%)
4	~ Bottom 75% of Waterbodies With Sport Fish	16764 (79%)	6601 (75%)	1186 (76%)	293 (77%)
NOT RATED	Waterbodies w/o Sport Fish	28739	39740	1501	845

*Percentages associated with rated waterbodies only.

**(exceptions: redband trout and burbot demoted to Tier 2 when not indicated as fishable in regulations)*

*** (exceptions: black & white crappie, yellow perch, and kokanee promoted to Tier 1 based on expert knowledge of desirability).*